

PREVALENCE OF MALARIA IN GENERAL POPULATION OF DISTRICT BUNER

Noor Muhammad, Akbar Hussain

*District Headquarter Hospital,
Daggar, Buner.*

ABSTRACT

Objectives: To assess the prevalence of malaria in general population of Distt: Buner.

Material and Methods: From March to August 2001. Total of 1020 blood films from 40 different localities of Distt: Buner was randomly collected from both male and female of different age groups (1 to 70) and were analysed in 40 different localities of district Buner.

Results: Out of these, 70 individuals (6.86%) were positive for Plasmodium. The plasmodium species found were *P.vivax* (5.78%) and *P.falciparum* (1.08%) with not a single case of mixed infections. Incidence was higher among the male (7.10%) as compared to female (6.52%). The higher rate of infections (11.58%) was found in age group 1-10 years and the lowest (5.19%) in age group 51-70 years. The highest rate of infections was recorded in August (11.66%) while the lowest rate of infection (3.98%) was noted in March. Slightly variation in prevalence of malaria was also observed in the four sectors A, B, C & D. The highest prevalence of infection (6.93%) was found in sector "C" where as the lowest infection (6.78%) was noted in sector "B".

Conclusion: Malaria is a common health problem in Distt: Buner both *P.vivax* and *P.falciparum* exist. The higher rate of infection was found under the age of ten years (11.58%) and the maximum cases were noted in August (11.66%) while the lowest infection was noted in March the highest infection (6.93%) was founded in sector "C" where as the lowest infection (6.78%) was noted in sector "B".

Key words: Malaria, Plasmodium, Vivax, Falciparum.

INTRODUCTION

Malaria is a major common health problem in the developing world. It affects about hundred of million of people world wide and kills more than a million annually¹. Its name is derived from the Italian word, meaning bad air. Hippocrates gives the first exact description of benign tertian and quatern fever². The parasites of malaria are found in tropics, sub tropics and part of temperate region³. Four species of Plasmodium are known to parasite human being, but two species i.e. *P. vivax* and *P. falciparum* are found in Pakistan^{4,6}. *P. ovale* is completely absent while *P. malaria* is rare⁷.

Malaria is a common vector born disease, which constitutes a major threat to economic development in many countries of the world⁸. It is transmitted by the bite of mosquito, of the genus *Anopheles*, blood transfusion, contaminated syringes and placenta^{7,9}.

Malaria is endemic in most part of Pakistan. It is more serious in children under five year of age, pregnant women and non immune people⁶.

The present survey was conducted to determine the prevalence of malaria in the general population of District Buner.

MATERIAL AND METHODS

This study includes 1020 blood films, which were randomly collected from both male and female population ranging 1-70 years, during the months of March up to August 2001 in 40 different localities of district Buner.

For malaria control programme and surveillance, Buner district was divided into 4 main sectors, i.e. A, B, C and D. These sectors are further sub divided into 17 sub sectors, comprising the total 182 index localities. In each sector 10 localities are selected for the collected of the blood films.

S. No	Sector	Sub Sector	No of index locality	No of selected
1	A	A ₁ -A ₄	42	10
2	B	B ₁ -B ₅	49	10
3	C	C ₁ -C ₄	40	10
4	D	D ₁ -D ₅	51	10
Total	4	17	182	40

The slides collected from different sectors are as follow.

1. Collection of slides from sector "A"

S. No	Sub sector	Name of localities	No of slide collected
1	A-1	Jowr	64
2	A-2	Torwarsak and Elai	80
3	A-3	Sultanwas, Ghazi Khanay and Bhai Kalay	76
4	A-4	Pacha Kalay, Balo Khan, Malakpur and Batai	85
Total	4	10	305

2. Collection of slides from sector "B"

S. No	Sub sector	Name of localities	No of slide collected
1	B-1	Gokand and Bagra	50
2	B-2	Topai and Maradu	48
3	B-3	Batara and Budal	56
4	B-4	Shal Bandai and Amnawar	62
5	B-5	Rega and Sawarai	64
Total	4	10	280

3. Slides collected from sector "C"

S. No	Sub sector	Name of localities	No of slide collected
1	C-1	Cheena, Chanar, Ambemla and Kooga	67
2	C-2	Kalpani, Bajkatta and Dewana Baba	75
3	C-3	Jungai, Garai and Khanano Derai	60
Total	3	10	202

4. Slides collected from sector "D"

S. No	Sub sector	Name of localities	No of slide collected
1	D-1	Chamla and Nawagai	55
2	D-2	Nagrai and Agarai	50
3	D-3	Ghazi Kot and Dkara (Amaza)	46
4	D-4	Chengalai and Gorgoshto	42
5	D-5	Tutaly and Khood Khail	40
Total	5	10	233

At the time of collection of blood samples a full detail of each person in order to have complete information, regarding name, age, sex, locality socioeconomic status and previous history of illness were noted.

Thick and thin smear was made from each person by taking blood from pricking the fingertip. These slides were then stained with Geimsa's stain¹².

For specific identification of malaria parasite, these smears were examined under x 100 oil immersion objective. The inten-

sity of parasites per microscopic field was also noted¹⁰.

RESULTS

In this study a total of 1020 blood films, (606) male and 414 female were collected in general population of District Buner from March up of August, 2001, of either locality, sex and age wise ranging from 1-70 years. All the collected blood films were examined for the presence of malarial parasites. Screening of all these blood films showed that *p. vivax* was more common than *p. falciparum* and mixed infection of both species was not found. Of the 1020 slides, 70 slides come to be Plasmodium positive, showing the over all incidence of species (6.86%).

Out of 70 plasmodium, positive blood films, 59 were infected with tertian malaria parasite (*p. vivax*) showing an over are incidence of 5.78%. And 11 slides (1.08%) revealed the malignant malaria cause of *p. falciparum*.

In case of male population out of 606 blood films, 43 were positive showing the incidence of infection (7.10%) where in case of female population out of 414 blood slide 27 were positive showing the incidence of malaria infection (6.52%). The incidence of malaria in this study was found highest (11.25%) in 1-10 years age group, while the lowest incidence was (5.19%) noted in age group 51-70 years.

Out of 606 male blood films, 43 (7.10%) blood slides were plasmodium positive with 36 (5.94%) *p. vivax* and 7 (1.16%) *p. falciparum*. Where the remaining 414 female blood films, having total (27 (6.52%) plasmodium positive with 23 (5.56%) *p. vivax* and 4 (0.97%) *p. falciparum*, showing that male infection rate was higher as compared to female the incidence of malaria observed in male

SECTION WISE INCIDENCE OF MALARIA IN GENERAL POPULATION OF DISTRICT BUNER

S. No.	Sector	Male			Female			Grant Total %
		No Exam	Inf: by P.v	Inf: by P.f	No Exam	Inf: by P.v	Inf: by P.f	
1	A	180	11	2	125	7	1	6.88
2	B	165	10	2	115	6	1	6.78
3	C	120	7	1	82	5	1	6.93
4	D	141	8	2	92	5	1	6.85
Total		606	36	7	414	23	4	6.86

TABLE-1

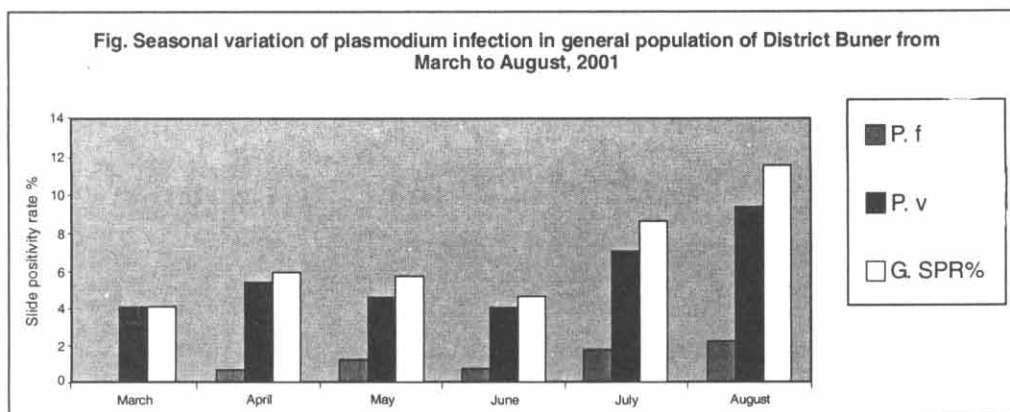
during this study (7.10%) was higher than the incidence (6.52%) noted in the female. So the over all incidence of infection in both male and female was (6.86%). Which was out of total 70 plasmodium positive cases. The malarial parasitic infection was observe in seasons spring and summer of district Buner. The month wise distribution of parasite infection was found

highest in August with an incidence of (11.66%) the lowest rate parasitic infection was found in the month of March which was noted to be (3.98%). Where as 2nd lowest rate of infection (4.67%) was in month of June. The incidence of malaria was found highest in sector "C" (6.93%) while the lowest prevalence (6.78%) in sector "B".

AGE AND SEX WISE INCIDENCE OF MALARIA IN GENERAL POPULATION OF DISTRICT BUNER

S. No.	Age Group	Male				Female				Grant SPR %
		No Exam	Inf: by P.v	Inf: by P.f	% age	No Exam	Inf: by P.v	Inf: by P.f	% age	
1	1-10 years	95	9	2	11.58	65	6	1	10.77	11.25
2	11-20 years	92	6	1	7.61	64	4	1	7.81	7.70
3	21.-30 years	80	4	0	5.00	55	3	0	7.27	5.93
4	31-40 years	86	5	1	6.98	60	3	0	5.00	6.16
5	41-50 years	90	5	1	6.67	65	2	1	4.62	5.82
6	51-60 years	85	4	1	5.88	56	2	0	3.57	4.96
7	61-70 years	78	3	1	5.13	49	3	0	6.12	5.51
Total		606	36	7	7.10	414	23	4	6.52	6.86

TABLE-2



DISCUSSION

Malaria is a common health problem in most part of Pakistan, both in terms of prevalence and the amount of morbidity and mortality, it causes. Endemic in 91 countries, which consist of 40% of the world population, malaria affects an estimated 300 million people per year worldwide causing more than a million deaths per year. Disease is more severe in children, pregnant women and non-immune people. The problem has become more serious due to resistance strains of plasmodia and anopheline mosquito.

Pakistan is a tropical country having vast system of irrigation and a lot of stagnant water after heavy rain fall, which provides in ideal environment for mosquito breeding. Transitions of malaria remains through out the year, but becomes more intense from July to November.

The common presentation of Malaria is with fever, chills and various degrees of anemia and splenomegaly. Attacks of the disease can be very severe in falciparum malaria and can result in severe anemia, jaundice, cerebral malaria, pulmonary edema, algid malaria, acute renal failure, black water fever and hypoglycemia. In more complicated cases metabolic acidosis, secondary

bacteria infections, acute hepatic failure, abortion, coma and seizures can occur.

These signs and symptoms are also found in other diseases. Further observations are needed for accurate diagnosis. It should, therefore, understand that the only correct way to diagnose a case of malaria is by examining the patient's stained blood film with a microscope. This is a highly skilled job.

Chloroquine remains the most widely used antimalarial drug in the world. But falciparum malaria is rapidly becoming resistance to chloroquine. The first resistance case was encountered in Latin America in 1955 and later reported from Thailand in 1962 chloroquine resistance in falciparum Malaria was first reported in Pakistan from Quetta in 1982.

Iqbal et al. noted high incidence of Malaria in N.W.F.P. with higher mortality and complication in falciparum Malaria probably because patients studies came from far flung areas of N.W.F.P. and Afghanistan in advanced stage of the disease. The majority of refugees settled in N.W.F.P. the highest incidence of malaria (6.71%) was noted in N.W.F.P. in 1990.

The incidence of malaria in this study is 6.86% is lower than that observed by various investigators from Peshawar, Mardan,

Hazara, Dir and Swat. (Huma and Mazher, 1993; Jan and Kaleem, 1992; Ghazala, 1982 and Bano and Subhani, 1981) the higher incidence in all the above studies might be due to influx of Afghan refugees during their study periods and in some studies due to hospital record on which these studies were based.

The prevalence of malaria observed by Jan, Kaleem and Khan 2000, in general population of district Bannu shows the incidence was (4.28%). It is lower than the current study (6.86%), this is because the present study was carried on mostly in rural population living from large cities. This might also be due to dilapidated drainage system, stagnant water after heavy rainfall, which provides an ideal environment for mosquito breeding, poverty and lack of health facilities.

CONCLUSION

Malaria is a common health problem in District Buner both *P. vivax* and *P. falciparum* exist. Its incidence increases from March to August (11.66%). The higher rate of infection was found under the age of ten years (11.58%). While the lowest infection was noted in March. The highest infection (6.93%) was found in sector "C" where is the lowest infection (6.78%) was noted in sector "B". Timely diagnosis and treatment of the diseases as important to lower the complication and prevent mortality.

REFERENCES

1. Cattani J, David son, Engers H. Malaria. In: 11th programme report. Geneva. Tropical Disease Res. 1993; 15.
2. Russell PF. Man's mastery of malaria. London: Oxford Uni: Press. 1955.
3. Black lock and South well. A guide to human parasitology: ELBS, H.K. Lewis and Co. LTD 1987; 46.
4. Abassi KA and Shaikh SA. Comparative study of malaria Due to *P. vivax* and *P. falciparum* pak pad J, 1977; 21 (4): 155.
5. Jan N, Ahmad A, Ashfaq NY and Hameed A. Geographical distribution of falciparum malaria in NWFP. J Med Sci, KMC Peshawar 1998; 8 (3).
6. Kaleem SM and Jan AH. Incidence of malaria in Afghan refugee of school going children of Mardan District (NWFP) Pakistan J Sc and Tech. Univ. Peshawar, 1993; 17.
7. Bano L and Mufti SA. A Study of Malaria in selected population of Peshawar, progress in Medicine, 1980; 9 (3-4).
8. Munir MA, Hafiz R, Solangi SM and Dil AS. Insecticides impregnated bed nets: A new tool for malaria prevention and control. An old strategy with new perspective. Pak J Med Res, 1996; 35 (2): 103.
9. Iqbal S, Nishter T, Hayat Z, Saddiq-ur-Rahman S. Revive of hundred cases of falciparum malaria. JCPSP 1998; 8: 114.
10. Pope LJ. Medical parasitology and helminthology. U.S. Naval Medical 1959; 218.
11. Raqiz F and Khan M.H. A survey of Malaria parasite in Abbottabad Pak J Med Res, 1995; 34 (1): 1.
12. Jan AH, Kaleem SM and Khan SN. Prevalence of malaria in general population of Bannu District (NWFP) Pak J Med Sci 2000; 9 (2).

Address for Correspondence:

Dr Noor Muhammad,
Village & P.O. Pir Baba,
District Buner.